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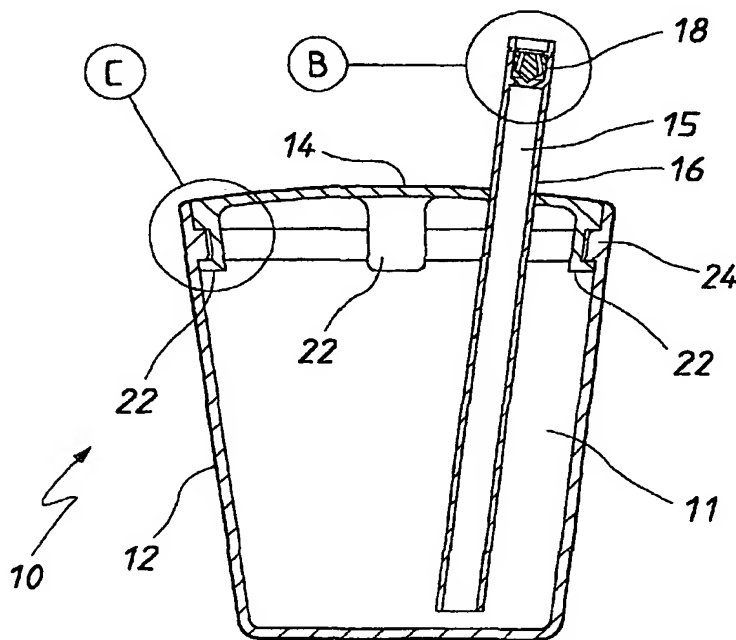
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(54) Title: A DRINKING APPARATUS



(57) Abstract: A drinking apparatus (10) including a container (12) having a lid (14) and defining an internal cavity for holding a body of liquid; a valve element (18) operates in conjunction with an opening on the container (12) and is operable between an open condition and a closed condition; the valve element (18) is biased to the closed condition wherein the apparatus completely encapsulates the internal cavity to thereby prevent substances from being introduced to the cavity; and removal of the lid (14) from the container results in an indication that the apparatus has been tampered with.

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A DRINKING APPARATUS

Technical Field

This invention relates to a drinking apparatus.

5

Background to the Invention

When a drink is kept in a container such as a cup or glass, there exists the risk that the drink may be deliberately contaminated by a person introducing a substance into the cup or glass such as by dropping the substance into the upper opening of the cup or glass when the drink is left unattended. This practice is colloquially known as "spiking a drink". Drinks have reportedly been spiked with substances including pharmaceutical substances, drugs or poisons in solid, liquid or powder form and even alcohol.

The effects on a person of having their drink spiked depend largely on the substance involved. A person may introduce a toxic substance to deliberately harm or confuse the user, or may introduce a drug in order to take advantage of the user when they are under the effects of the drug.

Summary of the Invention

In a first aspect the present invention provides a drinking apparatus including a container having a lid and defining an internal cavity for holding a body of liquid; a valve element operates in conjunction with an opening on the container and is moveable between an open condition and a closed condition; the valve element is biased to the closed condition wherein the apparatus completely encapsulates the internal cavity to thereby prevent substances from being introduced to the cavity; and

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removal of the lid from the container results in an indication that the apparatus has been tampered with.

In this way, the apparatus keeps a drink in the container and prevents substances from being added to the drink. If the lid of the container is removed in an attempt to introduce a substance the indication of tampering alerts a user that the apparatus has been tampered with.

The indication that the apparatus has been tampered with may include damage to either the lid or the cup.

The action of drawing liquid through the opening may cause the valve element to move to the open condition.

The valve element may be biased to the closed condition by gravity.

The container may be a cup.

The lid may be arranged to be snap fitted to the container.

The lid and container may fit together closely to resist removal of the lid by use of a leveraging tool.

The opening may be the bore of a straw.

The straw may be marked on its outer surface in the region of the valve element. This means that removal of that region of the straw is apparent to a user.

The region of the straw may be marked by colouring the region. The marking may be luminous or fluorescent.

The valve element may be luminous or fluorescent.

Brief Description of the Drawings

An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of an embodiment of a drinking apparatus according to the present invention;

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Figure 2 is a cross section view along the line A-A of Figure 1;

Figure 3 is an enlarged detail view of region C of Figure 1;

5 Figure 4 is an enlarged detail view of region B of Figure 2 with the valve element in the open position;

Figure 5 is an enlarged detail view of region B of Figure 2 with the valve element in the closed position;

10 Figures 6, 7 and 8 are top, side and plan views respectively of the valve element of Figure 2;

Figure 9 is a top view of the straw and valve element according to an alternative embodiment of the invention;

Figures 10 is a cross section view along the line D-D of Figure 9 showing installation of the valve element;

15 Figure 11 is a cross section view along the line D-D of Figure 9 showing the valve element in the open position; and

Figure 12 is a cross section view along the line D-D of Figure 9 showing the valve element in the closed position.

Detailed Description of the Preferred Embodiment

Referring to Figures 1 and 2, a drinking apparatus 10 is shown including a container in the form of cup 12 and a lid 14. Container 12 and lid 14 define an internal cavity 11 for holding a body of liquid such as a drink. The apparatus includes an opening in the form of the bore 15 of straw 16. Straw 16 is retained with lid 14 such as by being integrally formed with lid 14 by moulding the straw 16 and lid 14 as one component. Straw 16 includes a valve element in the form of plug 18. Plug 18 includes through holes 20.

To use the apparatus, a drink is poured into cup 12

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whilst lid 14 is not engaged with the cup. When the drink has been poured, lid 14 is snap fitted to cup 12. Lugs 22 on lid 14 engage under annular and inwardly directed projection 24 on the inner surface of cup 12. After
5 engaging lid 14 and cup 12, they cannot be separated without damaging either the lid 14 or the cup 12. This provides a tamper evident mechanism to alert a user to the possibility that the container has been interfered with and possibly has had a foreign substance introduced into
10 it.

Referring to Figure 3, lid 14 and cup 12 engage with a close fit. This prevents a levering tool, such as a knife blade or screwdriver, from being inserted between the lid 14 and cup 12 for the purpose of prising off lid
15 14.

Substances are prevented from being introduced to the container through bore 15 by valve element 18. Referring to Figure 4, when a user sucks on straw 16 the fluid that rises up bore 15 causes plug 18 to move to an open
20 position. At other times, plug 18 is biased by the force of gravity to the closed position shown in Figure 5. In this position, plug 18 rests on valve seat 19. Valve seat 19 blocks the through holes 20 in plug 18, thus preventing any foreign substances from by-passing plug 18 to enter
25 cavity 11.

Annular projection 21 prevents plug 18 from coming out of the upper end of straw 16. Annular projection 21 may be formed by applying heat and pressure to the straw to deform the straw.

30 Referring to Figures 9 to 12 an alternative embodiment of a valve element of a drinking apparatus according to the invention is shown. In this embodiment the valve element is in the form of a sphere 31. The

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underside of valve seat 19 includes a lead-in taper 26 which assist with insertion of sphere 31 into the straw by use of mandrel tool 28. In the open position, sphere 31 is prevented from exiting upper end of straw 16 by covered
5 end 30. Liquid may flow out of straw 16 through holes 32. In the closed position valve seat 19 prevents substances from by-passing the sphere and entering the container.

The outside of straw 16 is coloured by application of a fluorescent or luminous non toxic dye (not shown) in the
10 vicinity of sphere 31. The fluorescent or luminous colouring improves visibility in low light or dark conditions. If the straw 16 is cut to remove the region of the straw that houses the valve element, this will be readily apparent to a user because they will know to
15 expect to see the coloured portion on the straw of an apparatus that has not been tampered with. Similarly, the valve element may be made luminous or fluorescent to alert a user if the valve element is missing.

In another embodiment, lid 14 is formed with a
20 concave region on its upper surface which takes up all or part of the upper surface. This provides a catchment area for any liquid substance that is placed on top of lid 14 and helps to prevent that liquid from running off lid 14 to enter the apparatus at the join between cup 12 and lid
25 14.

All parts of the apparatus are formed from a clear, recyclable plastic that is difficult to penetrate with a hypodermic needle. A suitable plastic is Polypropylene Grade, wide spec. 4-14 Thermoplastic (TPE) or equivalent,
30 talc filled with a low flow melt index.

After use, the container may be returned to a central collection point. At this collection point the lid is forcibly removed from the cup resulting in damage to

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either the cup or lid. Any liquid remaining in the cup is discarded and the plastic components of the assembly are recycled.

Whilst the embodiment of the invention described
5 herein includes an aperture in the form of a straw it is not limited to this arrangement.

Any reference to prior art contained herein is not to be taken as an admission that the information is common general knowledge, unless otherwise indicated.

10 Finally, it is to be appreciated that various alterations or additions may be made to the parts previously described without departing from the spirit or ambit of the present invention.

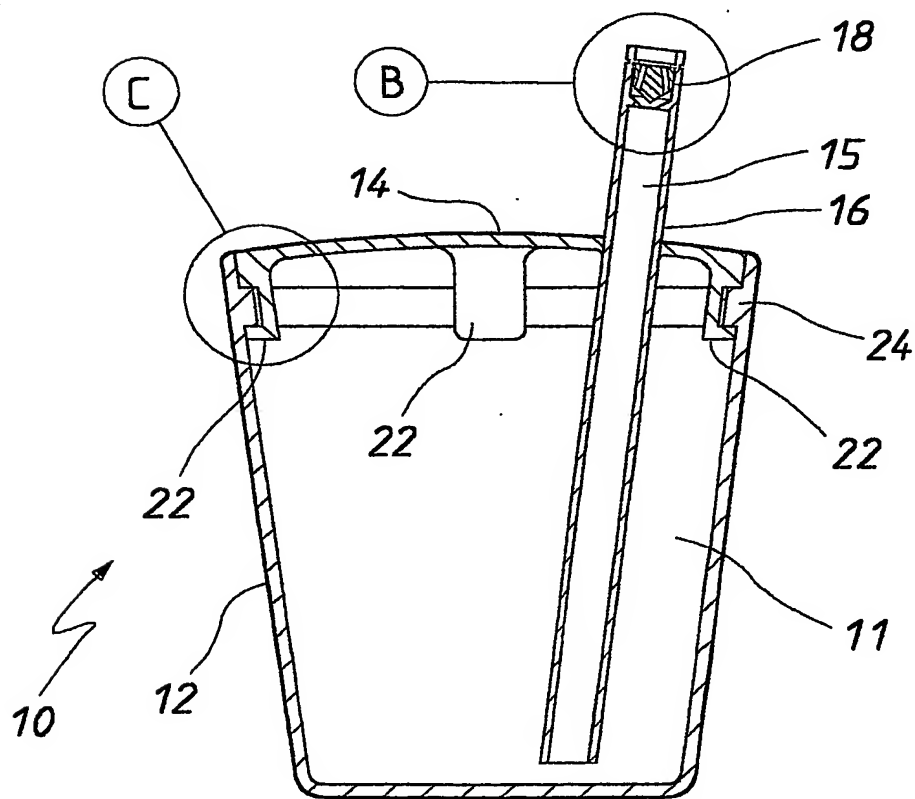
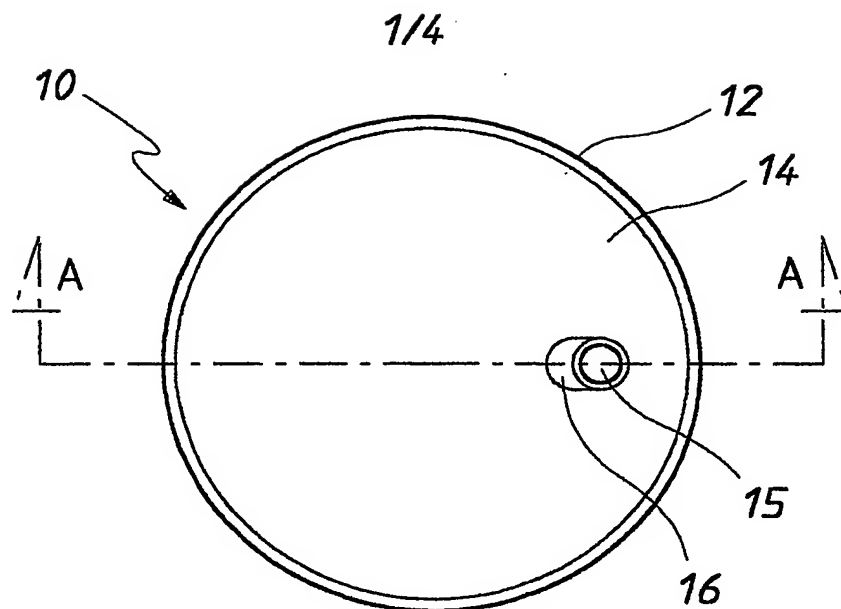
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A drinking apparatus including:
5 a container having a lid and defining an internal cavity for holding a body of liquid;
a valve element operates in conjunction with an opening on the container and is operable between an open condition and a closed condition;
10 the valve element is biased to the closed condition wherein the apparatus completely encapsulates the internal cavity to thereby prevent substances from being introduced to the cavity; and removal of the lid from the container results in an indication that
15 the apparatus has been tampered with.
2. A drinking apparatus according to claim 1 wherein the action of drawing liquid through the opening causes the valve element to move to the open condition.
20
3. A drinking apparatus according to either claim 1 or claim 2 wherein the valve element is biased to the closed condition by gravity.
- 25 4. A drinking apparatus according to any preceding claim wherein the container is a cup.
5. A drinking container according to any preceding claim wherein the lid is arranged to be snap fitted to the
30 container.
6. A drinking apparatus according to any preceding claim wherein the lid and container fit together closely to

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resist removal of the lid by use of a leveraging tool.

7. A drinking apparatus according to any preceding claim
5 wherein the opening is the bore of a straw.
8. A drinking apparatus according to claim 7 wherein the
straw is marked on its outer surface in the region of
the valve element.
- 10 9. A drinking apparatus according to claim 8 wherein the
region of the straw is marked by colouring the
region.
- 15 10. A drinking apparatus according to claim 9 wherein the
region of the straw is marked by being fluorescent or
luminous.
11. A drinking apparatus according to any preceding claim
20 wherein the valve element is luminous or fluorescent.
12. A drinking apparatus according to any preceding claim
wherein the indication that the apparatus has been
tampered with includes damage to either the lid or
25 the cup.



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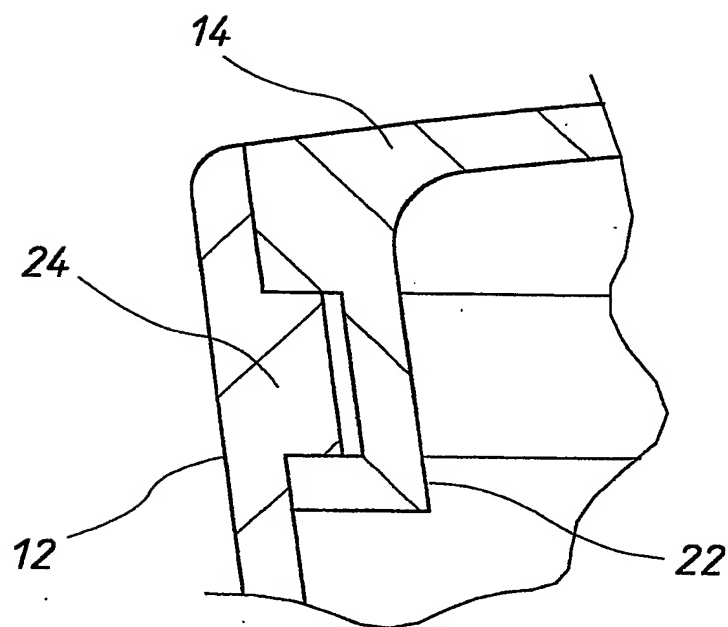


FIG. 3

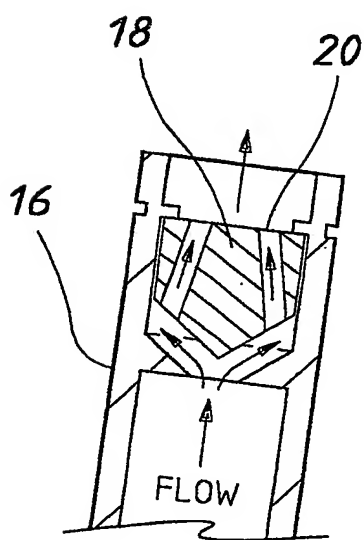


FIG. 4

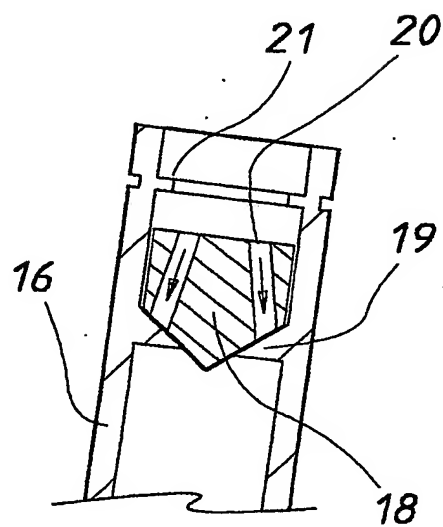


FIG. 5

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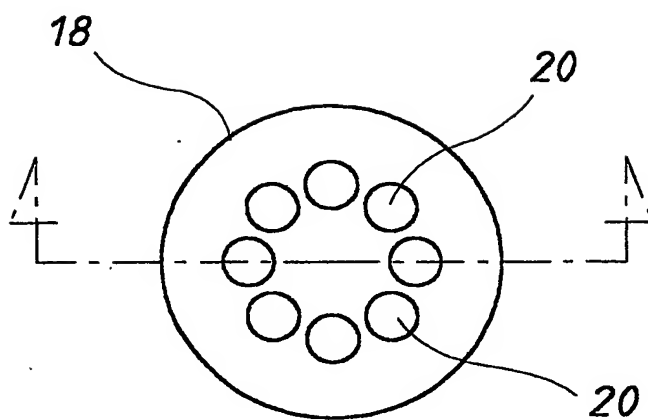


FIG. 6

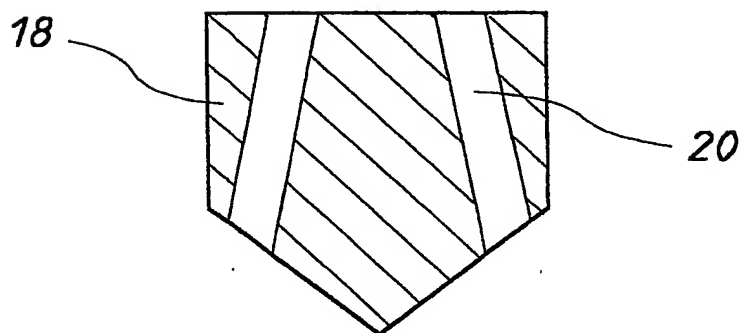


FIG. 7

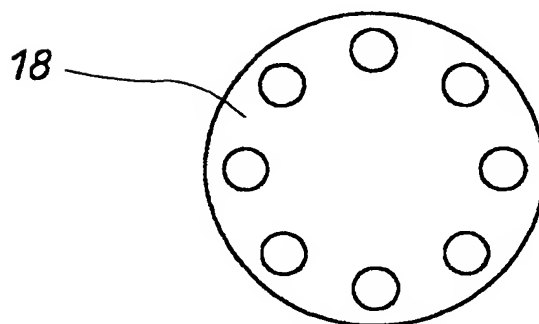


FIG. 8

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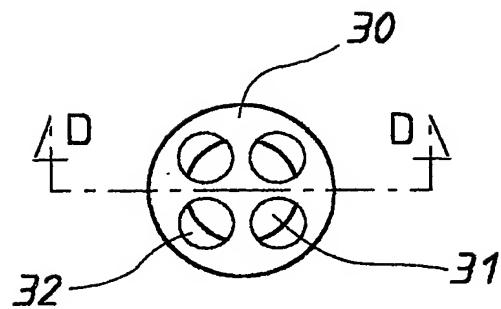


FIG. 9

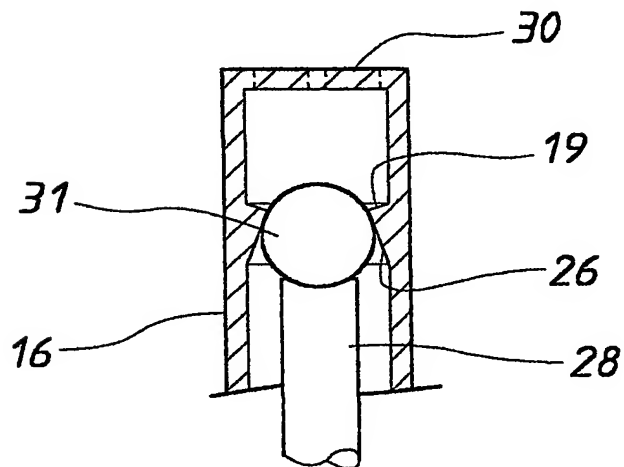


FIG. 10

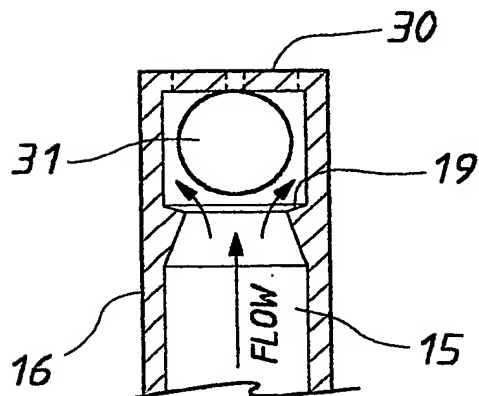


FIG. 11

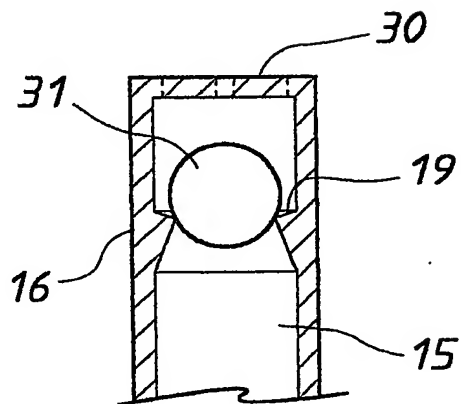


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No. .
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A. CLASSIFICATION OF SUBJECT MATTER				
Int. Cl. ⁷ : A47G 21/18, 19/22, 19/12.				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) IPC A47G 21/18, 19/22, 19/12, A61J 15/00.				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU IPC A47G 21/18, 19/22, 19/12, A61J 15/00.				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI (A47G 21/18, 19/22, 19/12, A61J 15/00) AND ((TAMPER+) OR (STRAW+) OR (SPIK+) OR(DRUG+ OR POISON+ OR ALCOHOL+))				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	WO 0049920 A (STICHTING VAN DE GRONDEN AND MULDER MANAGEMENT TRUST) 31 August 2000. See entire document.			
A	WO 0049922 A (DARK) 31 August 2000. See entire document.			
A	WO 9938423 A (CANNON RUBBER LIMITED) 5 August 1999. See entire document.			
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex				
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Date of the actual completion of the international search 19 September 2003		Date of mailing of the international search report 24 SEP 2003		
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer R. WEBER Telephone No : (02) 6283 2546		

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU03/01016

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 0170079 A (SAFETY 1 ST INC) 27 September 2001. See entire document.	
A	GB 2314497 A (ANTONIOU) 7 January 1998. See entire document.	
A	US 6427864 B (ASSELIN) 6 August 2002. See entire document.	
A	DE 10158369 A (GATTINGER) 12 June 2003. See entire document.	
A,E	EP 266067 A (KOSA DESIGNS LIMITED) 4 May 1988. See entire document.	
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU03/01016

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
WO	200049920	AU	34246/00	DE	19907581
WO	200049922	AU	30026/00	BR	200008547
		US	6116458	EP	1154713
WO	9938423	AU	22913/99	EP	1051094
		NZ	505906	GB	2333770
				PL	342039
WO	200170079	AU	45597/01	US	6305570
GB	2314497			EP	1265517
US	6427864	NIL			
DE	10158369	NIL			
EP	266067	AU	79346/87		
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